Contents

Preface v

List of Contributors xi

SESSION I—FLAW PREVENTION, MITIGATION AND REPAIR

On-Line Monitoring to Assure Structural Integrity of Nuclear Reactor Components 3
E. KISS & S. RANGANATH (*USA*)

Mechanical Methods of Improving Resistance to Stress Corrosion Cracking in BWR Piping Systems 17
J. S. ABEL, J. TITRINGTON, R. JORDAN, J. S. POROWSKI, W. J. O'DONNELL, M. L. BADLANI & E. J. HAMPTON (*USA*)

Steam Generator Repair 31
K. SMITH & M. SORT (*France*)

Impurity Effects in BWR Water Chemistry 47
P. FEJES, L. LJUNGBERG & L. UNNEBERG (*Sweden*)

Weld Overlay Repairs from Conception to Long Term Qualification 59
P. C. RICCARDELLA, D. R. PITCAIRN, A. J. GIANNUZZI & T. L. GERBER (*USA*)

Recent Topics of Flaw Prevention 83
S. FURUYA, N. MORISHIGE, Y. TANAKA, T. UMEMOTO & M. AMANO (*Japan*)

New Options for Improved Steam Generator U-Bend Integrity . 95
J. E. GUTZWILLER & S. W. GLASS (*USA*)

Discussions on Session I 109

SESSION II—MATERIALS CHARACTERIZATION AND ANALYSIS

Stress Corrosion Cracking of Nuclear Reactor Pressure Vessel and Piping Steels 119
M. O. SPEIDEL & R. M. MAGDOWSKI (*Switzerland*)

Comments on the Present Practice of Fatigue Analysis of Nuclear Power Plant Components 143
J. JANSKY & H. SCHULZ (*FRG*)

A Determination of the Benefits of Annealing Irradiated Pressure Vessel Weldments 155
R. G. LOTT & T. R. MAGER (*USA*)

Recent Experience in Pressure Vessel Materials Irradiation . . 171
T. R. MAGER, S. E. YANICHKO & R. G. LOTT (*USA*)

Crack Initiation and Crack Growth during Thermal Shock Tests in the Reactor Pressure Vessel of the HDR under Corrosive Medium Conditions 187
G. E. NEUBRECH, G. KATZENMEIER & L. WOLF (*FRG*)

A Simplified Method for Calculating the Stress Intensity Factor at Crack Arrest 207
R. J. FABI, D. J. AYRES & D. M. NORRIS (*USA*)

A New Procedure for Evaluating Crack Arrest in Reactor Vessels 227
R. J. FABI, D. J. AYRES & D. M. NORRIS (*USA*)

Leak-Before-Break: An Integrated Approach for High Energy Piping 237
V. K. CHEXAL, D. M. NORRIS & W. L. SERVER (*USA*)

Demonstrating Leak-Before-Break for CANDU Heat Transport Piping 255
M. J. KOZLUK, D. K. VIJAY, M. L. AGGARWAL, T. C. LIN, B. W. MANNING & A. S. MISRA (*Canada*)

Fracture Behaviour of Large Scale Pressure Vessels in the Hydrotest 265
R. RINTAMAA, H. KEINANEN, K. TÖRRÖNEN, H. TALJA, A. SAARENHEIMO & K. IKONEN (*Finland*)

Discussions on Session II 293

SESSION III—MAJOR ISSUES IN PRESSURE BOUNDARY ASSESSMENT

Piping Issues in Nuclear Systems in the USA 309
A. TABOADA, L. C. SHAO & R. H. VOLLMER (*USA*)

Some Reflections on Attitudes and Mind-Sets Concerning Pressure Vessel Failure in Nuclear Reactors 315
G. ÖSTBERG (*Sweden*)

Implications of the Surry Piping Failure for other Nuclear and Fossil Units 331
V. K. CHEXAL & R. L. JONES (USA)

Assurance of the Integrity of the Pressure Circuits of the Sizewell B Nuclear Power Station 345
T. CURRIE (*UK*)

Discussions on Session III 355

Index 365